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APPLIED GEOLOGY, INC.
Environmental Consultants

December 31, 1997

Jan 13 9 42 AM '98

Mr. Morris Tucker
Property Co-Chair
Grace Congregational United
Church of Christ
8 Court Street
Rutland, VT 05701-4059

RE: Grace Congregational United Church of Christ, Rutland, Vermont (Site# 97-2209)
Supplemental Subsurface Investigation Summary Report

Dear Mr. Tucker:

Lincoln Applied Geology, Inc. (LAG) is pleased to present this Supplemental Subsurface Investigation Summary Report for Grace Congregational United Church of Christ located at 8 Court Street in Rutland, Vermont. In response to the discovery of free-floating petroleum product and contamination of soils during the removal of two underground storage tanks (USTs) on May 20, 1997, the Vermont Department of Environmental Conservation (VDEC) Sites Management Section (SMS) requested that a Supplemental Subsurface Investigation be performed to determine the degree and extent of petroleum contamination. The requested investigation was performed by LAG on November 5, 6, and 13, 1997. The initial Underground Storage Tank (UST) assessment and closure report dated May 27, 1997 was performed and previously submitted by Griffin International Inc.(GI) to the VDEC Underground Storage Tank Program.

The enclosed Supplemental Subsurface Site Investigation report includes well and soil boring logs, monitoring data, and ground water quality results. The investigation shows that ground water at the site is slightly impacted by residual #2 fuel oil within the former UST #1 source area, and is moderately impacted within the UST #2 source area. There are no detectable contaminant impacts to potential sensitive receptors other than soil and a limited shallow unconsolidated ground water system within the source areas. We believe that no active soil and ground water remedial activities are warranted to address the limited residual petroleum contamination present. However, an additional monitoring and ground water quality sampling event should be performed in the spring of 1998. We believe the data will show that no further work or action will be required. If this is the case, the site will qualify for a Sites Management Activity Completed (SMAC) and no further work would be required.

After you have completed your review of this report, please call so we can forward a copy on to the VDEC SMS. If you have any questions or comments, please contact me at (802) 453-4384.

Sincerely,
Lincoln Applied Geology, Inc.

William D. Norland

William D. Norland
Hydrogeologist

WDN/jsb
enclosures

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Supplemental Subsurface Investigation Report

Grace Congregational
United Church of Christ
8 Court Street, Rutland, Vermont
(VDEC Site #97-2209)

Prepared for:

Grace Congregational
United Church of Christ
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Rutland, Vermont 05071
Contact: Morris Tucker
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December 31, 1997

Prepared by:

William D. Norland

William Norland

Reviewed and Approved by:

Stephen Revell

Stephen Revell, CPG

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Executive Summary

On May 20, 1997 the combined efforts of Fabian Earth Moving (FEM), Ostrout Petroleum Inc. (OPI) and Griffin International Inc. (GI) completed the removal and closure of two underground storage tanks (USTs) at the Grace Congregational United Church of Christ (GCC), in Rutland, Vermont. One 2,000 gallon #2 fuel oil UST (#1) in fair condition with some rusting and pitting of the tank was removed. Soils beneath UST#1 were excavated to a depth of 7 feet below grade where a soil PID level of 106 parts per million (ppm) was assayed. As described in the GI UST closure report all soils were backfilled in the excavation.

One 5,000 gallon #2 fuel oil UST (#2) was also removed. UST#2 was in poor condition with some rusting, pitting, and several holes. The piping was noted in fair condition. During removal of UST #2 the GI Engineer observed a thin layer of free phase fuel oil product atop the ground water. A small quantity of free product appears to have been trapped by the dense silt and clay soils which was recovered and properly disposed of by OPI.

Based on the results of the May 20, 1997 UST(s) removal and related data, the VDEC Sites Management Section requested that additional work be performed to further define the extent and magnitude of the contamination. Mr. Morris Tucker, Co-Chair Person for the GCC property, contracted Lincoln Applied Geology, Inc. (LAG) to conduct the requested subsurface investigation.

In order to define the extent and magnitude of the fuel oil contamination, LAG installed five monitor wells on-site on November 5 and 6, 1997. Wells were installed in each of the two source areas (MW-3 and 5), downgradient of the two source areas (MW-2 and 4), and upgradient of the two source areas (MW-1). LAG also completed two soil borings (SB-1 and 2) and PID ambient airspace monitoring of the GCC and basements of downgradient businesses located on the west side of Court Street. Wells containing ground water were properly developed and sampled the following week. Both soil borings were backfilled with their respective soils.

On November 13, 1997, a site visit was made to record static ground water level measurements, monitor volatile contaminant vapors by PID, and collect ground water samples from the previously installed monitor wells. A surface water sample was also collected from a ground water seep located in the basement of the GCC. All water quality samples were analyzed for the presence of petroleum related compounds including BTEX, MTBE, and total petroleum hydrocarbons.

Based on the presence of very limited ground water and soil contamination in the two source areas at the site, LAG recommends the collection of ground water samples during high water table season (when there is the greatest chance of a water level being

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present in MW-2 and 4) in the spring of 1998. This water quality data will be used to determine whether further work at the site is necessary. We anticipate no further work will be required. Based on the current database, we do not recommend any active soil or ground water remediation activities. The very limited contamination identified is and will be naturally attenuated, in part by biodegradation processes.

Site Description

The GCC site is located at 8 Court Street in Rutland, Vermont. The General Location Map showing the site is presented as **Figure 1**. The property is bounded by Court Street to the west, West Street to the north, a private residence to the east, and the Rutland Library and Center street to the south. The buildings on-site are served by municipal water and sewer. The GCC building contains a basement that has dirt and concrete floors and two sumps. Important site features including buildings, sewer and water pipes, electric pipes, former USTs #1 and #2, new UST location, two soil boring locations and five ground water monitor well locations are shown on the detailed site map presented as **Figure 2**.

Site History

GI, in conjunction with FEM and OPI completed the excavation, removal, and assessment of two underground storage tanks (USTs) at the GCC property on May 20, 1997. The UST Permanent Closure Form, photoionization detector (PID) data, and photographs of the site were submitted by GI to the Vermont Department of Environmental Conservation Underground Storage Tank Program (USTP) in a report dated May 27, 1997. Excavated soils were screened for the presence of volatile organic compounds (VOCs) using an 11.7 electron volt (eV) lamp photoionization detector (PID). The preliminary findings stated in the UST closure report are summarized below.

UST #1; A 2,000 gallon single wall steel #2 fuel oil UST, approximately 30-35 years old;

- UST was found in fair condition with some rust and pitting;
- The fill pipe was broken at the connection with the UST;
- No holes were found in the UST;
- PID soil assays ranged from 62 parts per million (ppm) to 106 ppm from 6 to 7 feet deep;
- No free product was encountered during the excavation;
- Ground water was encountered at 7 feet below grade in the excavation; and
- All excavated soils were backfilled.

UST #2 ; A 5,000 gallon single wall steel #2 fuel oil UST, approximately 30-35 years old;

- UST was found in poor condition, with rust, pitting, and holes;
- Associated piping was in fair condition;
- Several holes were found in the UST;
- PID soil assays ranged from background (BG) to 122 ppm from 1 to 6 feet deep;
- A test pit was completed in the northwest end of the UST pit, and soils assayed PID levels between 22 and 80 ppm at depths of 10 to 14 feet;
- Limited free product was encountered atop ground water in the excavation and recovered; and
- All excavated soils were backfilled.

Approximately 200 gallons of fuel oil and UST bottom wastes were generated during the USTs removal. No soil or ground water samples for laboratory analyses were collected from the UST excavations during their removal. Therefore, the extent and degree of soil (and possibly ground water) contamination in the vicinity of the USTs required further investigation.

This LAG Supplemental Subsurface Investigation Summary Report presents the results of the additional site investigations which were completed on November 13, 1997, and the recommendations for appropriate actions at the site.

Site Geology

Two soil borings (SB-1 and 2) and five monitor wells (MW-1, 2, 3, 4, and 5) were drilled and installed using vibratory drilling methods on November 5 and 6, 1997 by Adams Engineering, Inc. Five foot long soil samples were collected, logged descriptively, and screened for contamination by volatile organic compounds (VOCs) using a PID with 10.2 eV lamp. A PVC monitor well was installed in five of the borings. Each well was properly constructed with each well screen packed with sand, a bentonite slurry seal placed atop the sand pack to below grade, and a bolt-down well box cemented flush with grade. The location of the 5 wells are shown on **Figure 2**. Monitoring wells were constructed of 1.5" diameter PVC, with 9 to 10 foot long well screens, and 1.5 to 4 foot long solid riser pipes.

Soils encountered during drilling include a layer of fill consisting of silt, sand, gravel, concrete, and brick that ranges in thickness from 0.6 feet (MW-2) to 6.0 feet (MW-4). Beneath the fill unit is a native very fine sandy silt with gravel unit (glacial till) that is dry to wet, has a weak to dense blocky structure, and ranges in thickness from 4.1 feet (MW-4) to 9.4 feet (MW-2). Beneath the upper glacial till unit is a moist to dry, dense glacial till unit that ranges in thickness from 1.7 feet (MW-1) to 4.1 feet (MW-4). A limited shallow soil based ground water system is perched above the lower glacial till unit in MW-1, 3, and 5. There is no shallow perched system in MW-2 and 4. Bedrock was encountered in both soil borings and monitor well borings in this area at depths

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ranging from 6.5 feet (SB-2) to 14.2 feet (MW-4). As shown on **Figure 3**, the bedrock surface slopes to the west-northwest.

Shallow unconsolidated soils present above bedrock are mapped on the Surficial Geologic Map of Vermont (1970) as glacially-derived, ice margin till, terminal moraine deposits. Bedrock beneath the site is mapped on the Centennial Geologic Map of Vermont (1961) as the Lower Cambrian age (540 to 570 million years old) Dunham dolomite, a buff weathered siliceous dolomite.

The detailed well and soil boring logs including soil descriptions, PID levels, and well construction are included as **Appendix A**. Review of **Appendix A** indicates that evidence of vapor phase contamination by VOCs associated with fuel oil were detected in soils from 0 to 12.2 feet below grade in MW-3 (BG to 16.8 ppm), from 0 to 12.3 feet below grade in MW-5 (1.4 to 28 ppm), and from 0 to 12.5 feet below grade in SB-1 (BG to 1.6 ppm). These data indicate that a limited amount of soil(s) in the two former UST areas is impacted by low levels of vapor and adsorbed phase petroleum to the top of bedrock.

Ground Water Level and Headspace PID Monitoring

On November 13, 1997, LAG conducted a top of casing (TOC) stadia survey of MW-1, 2, 3, 4, and 5. Depth to ground water below TOC and the PID level of vapors in each well headspace were also measured. Depth to ground water varied from 2.60 feet (MW-3) to 5.18 feet (MW-5). MW-2 and 4 were dry. Detailed ground water elevation data from November 13th is presented in **Table 1**, and PID assays are included in **Table 2**. Review of **Table 2** indicates that well headspace PID levels on November 13th were all at background (BG), with the exception of MW-3 (at the former location of UST #2) which assayed 4.2 ppm. This data indicates limited vapor (and adsorbed) phase contamination and correlates well with the water quality results.

Site Hydrogeology

Ground water elevation data from November 13th was used to develop the contour map of the shallow ground water system presented as **Figure 4**. Review of **Figure 4** shows that it generally flows west toward West Street. The relatively steep ground water gradient across the site ranges from 0.06 to 0.10 feet/foot. The contour map was in part inferred from MW-2 and 4 that were dry to the top of bedrock. By using data from these wells, the ground water is shown flowing to the west (which would have been predicted) and which generally mimics the contour of the bedrock surface. A combination of perching above basal till and/or bedrock normally controls shallow ground water flow in this type of geologic system. Although depth to ground water in the bedrock aquifer is unknown, ground water is normally discharging out of the bedrock in this area of Rutland. In this regard, we assume its level very close to the top of the

underlying bedrock. In addition, an area of oil and ground water seepage in the GCC basement adjacent to former UST #2 results from perched ground water entering the basement and puddling atop the "dirt" floor. The oil in the seep is highly degraded, has a faint odor, and is not detectable by PID. The lack of water in MW-2 and 4, the presence of seepage along the most upgradient part of the basement wall, and the lack of seepage along downgradient parts of the basement wall suggest that the perimeter drain around the basement is intercepting shallow ground water flow and discharging it to the storm drain shown on **Figure 2**.

Water Quality Sampling

On November 13, 1997 water quality samples were collected from MW-1, 3, and 5, and the oil/water seepage area within the GCC basement. Wells MW-2 and 4 were dry. Since MW-1, 3, and 5 recovered very slowly after purging the wells (due to the low permeability of the glacial till soils) water samples were collected both before and after purging. The "before purging" samples were discarded and the "after purging" samples were submitted for analysis from MW-1 and 3 since ground water readily recovered in these wells. The "before purging" sample for MW-5 was analyzed since ground water did not recover sufficiently to collect an "after purging" sample. All samples were analyzed along with a trip blank for BTEX and MTBE, and for total petroleum hydrocarbons (TPH) by EPA Methods 8015 and 8100 Modified at Green Mountain Laboratories, Inc. in Montpelier, Vermont.

The water quality results are summarized in **Table 3** and are presented on **Figure 5**. Copies of the laboratory reports are included as **Appendix B**. Review of **Table 3, Figure 5** and **Appendix B** indicate that BTEX, MTBE, and TPH were detected in ground water from MW-3 and 5. MW-3 (located in the UST #2 source area) showed the highest levels of dissolved contamination with 291 parts per billion (ppb) BTEX and 91 ppb MTBE, 2.06 ppm TPH (8015) and 18 ppm TPH (8100). Benzene was detected at 23 ppb in MW-3. MW-5 (in the UST #1 source area) contained lower levels of benzene (1.8 ppb) and BTEX (66.1 ppb), but higher levels of TPH (11.3 ppm by 8015 and 19 ppm by 8100). MW-1 and the GCC basement seep samples did not contain BTEX or TPH at detectable levels.

Potential Sensitive Environmental Receptors

Potential sensitive environmental receptors at the site include indoor air at the GCC and several nearby buildings and the perimeter drain discharge to the storm drain. The soil and ground water in the vicinity of the two former USTs have already been minimally impacted. The top of the underlying bedrock ground water system beneath the former USTs may possibly be minimally impacted, although it has not been determined. As presented in **Table 2**, PID assays of indoor air in basements of nearby buildings yielded only BG results. PID assays in the two basement sumps (containing

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water) in the GCC basement were also BG. The (Rutland County) Court building, Ryan Realty, and Stickney M.D. buildings are located southwest, west, and northwest of the GCC building on the west side of Court street. The Howard House and Bole House are both unoccupied and owned by GCC. They are located north of the west end of the GCC building. The (Rutland Public) Library is located south of GCC building. Based upon site observations and the results of the initial site investigation, no potential indoor air receptors have been impacted by the petroleum contamination. Based on the low residual contaminant concentrations detected in soil and ground water, contaminant migration will be limited by the low permeability fine grained glacial soils and should not impact indoor air.

Even though ground water in MW-3 and 5 is impacted by low levels of #2 fuel oil contaminants, only MW-3 at 23 ppb exceeds the Vermont Primary Groundwater Quality Enforcement Standards (GQES) for benzene of 5.0 ppb. MW-3 with an MTBE level of 91 ppb also exceeds the GQES of 40 ppb. Although the basement seep had non detectable levels of BTEX or MTBE, we are minimally concerned that some ground water based contamination is being carried over to the storm drain shown on **Figure 2**. If possible the storm drain should be sampled during the next sampling round.

The shallow perched or bedrock aquifers are not used for potable water supply development in this area of Rutland. The low permeability glacial till aquifer immediately above bedrock suggest that potential contaminant impacts to the bedrock aquifer are minimal to non-existent. The City of Rutland provides potable municipal water to the GCC and surrounding residences and businesses. Based upon these data, LAG feels that the human health related risks associated with the limited contaminated ground water are minimal to non-existent.

Conclusions

Based on the data collected, observations, and evaluation presented, the following conclusions are made:

1. A 2,000 gallon fuel oil UST #1 and 5,000 gallon fuel oil UST #2 were excavated and removed from the site by GI on May 20, 1997.

2. UST #1 was in fair condition with a broken fill pipe connection indicating that a release of #2 fuel oil may have previously occurred. UST #2 was in poor condition with several holes providing evidence of past petroleum releases.

3. Floating petroleum product was observed on perched ground water in the UST #2 excavation in May 1997. No free product was detected by LAG during monitor well installations or subsequent ground water monitoring.

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4. PID levels ranging from 62 to 106 ppm were detected by GI from soils in the UST #1 excavation. The extent of soil contamination was not fully delineated during the UST removal and assessment performed by GI.

5. PID levels ranged from 22 to 122 ppm in soils excavated from around UST #2 and a test pit at the northwest end. Although the GI report indicated that the test pit was excavated to a depth of 14 feet (and bedrock was not encountered), LAG encountered auger refusal on bedrock at 12.2 feet at that location in MW-3. Due to the close proximity of the GCC building, the extent of soil contamination was not fully delineated by GI.

6. Soils in the vicinity of the two former USTs consist of a layer of granular fill materials of variable thickness atop fine grained glacial till. The till unit is denser and less permeable immediately atop bedrock, forming a shallow perched ground water aquifer within the till unit and retarding contaminant migration into the bedrock. Dolomite type bedrock underlies the site at depths of 6.5 to 14.2 feet below grade.

7. The depth to shallow perched ground water on-site ranging from 2.60 feet (MW-3) to 5.18 feet (MW-5) below grade; the dry condition of MW-2 and 4; and the combined wetness on the upgradient side of the basement and dryness on the downgradient side of the basement suggest that the foundation/perimeter drain is intercepting shallow ground water flow to some degree.

8. The shallow perched aquifer ground water flow direction on-site is toward the west at a relatively steep gradient of 0.06 to 0.10 feet/foot.

9. The shallow perched aquifer is slightly to moderately impacted by petroleum related VOC contaminants in the immediate vicinity of the former UST areas. 291 ppb of BTEX and 91 ppb of MTBE were detected in MW-3, with benzene present at 23 ppb. The benzene concentration is above the GQES of 5.0 ppb (Enforcement Standard) and the MTBE concentration is above the GQES of 40 ppb. The limited residual fuel oil contamination present in the two former UST areas does not require active remediation.

Recommendations

As a result of the findings from the UST(s) removal and this Supplemental Subsurface Investigation, the following recommendations are made:

1. Do not perform any active remediation of soil and/or ground water

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associated with the two former UST areas.

2. Perform another ground water level, well headspace PID assay, and ground water sampling event in the Spring of 1998.

3. Attempt to access the storm drain outlet, conduct a PID assay and sample the discharge for BTEX and MTBE during the next sampling event.

4. Submit a summary letter including the additional monitoring and water quality data along with appropriate conclusions and recommendations for site closure (SMAC) or additional work if warranted.

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Project: Grace Congregational Church
Location: Rutland, Vermont

Table 1
VDEC Site # 97-2209
Sheet 1 of 1

Ground Water Elevation/Product Level (feet)

Data Point	TOC (feet)	11/13/97		
MW-1	102.00	98.24		
MW-2	96.29	<85.09		
MW-3	99.36	96.76		
MW-4	93.71	<80.16		
MW-5	99.10	93.92		

Notes:
1 - Elevation datum assumed
2 - Reference elevation is elevation of top of PVC well casing
Light Grey Cell = DRY
Dark Grey Cell = Inaccessible

Project: Grace Congregational Church
Location: Rutland, Vermont

Table 2
VDEC Site # 97-2209

Photoionization Results (PID - ppm)

Data Point	10/27/97	11/13/97		
MW-1		BG		
MW-2		BG		
MW-3		4.2		
MW-4		BG		
MW-5		BG		
Bole House	BG			
Howard House	BG			
Church Basement	BG	BG		
Church Basement Seep	BG			
Court Basement	BG	BG		
Library Basement	BG	BG		
Ryan Realty		BG		
Stickney M.D. Basement		BG		

Notes:
BG - Background
SL - Saturated Lamp

Project: Grace Congregational Church
Location: Rutland, Vermont

Table 3
VDEC Site # 97-2209
Sheet 1 of 1

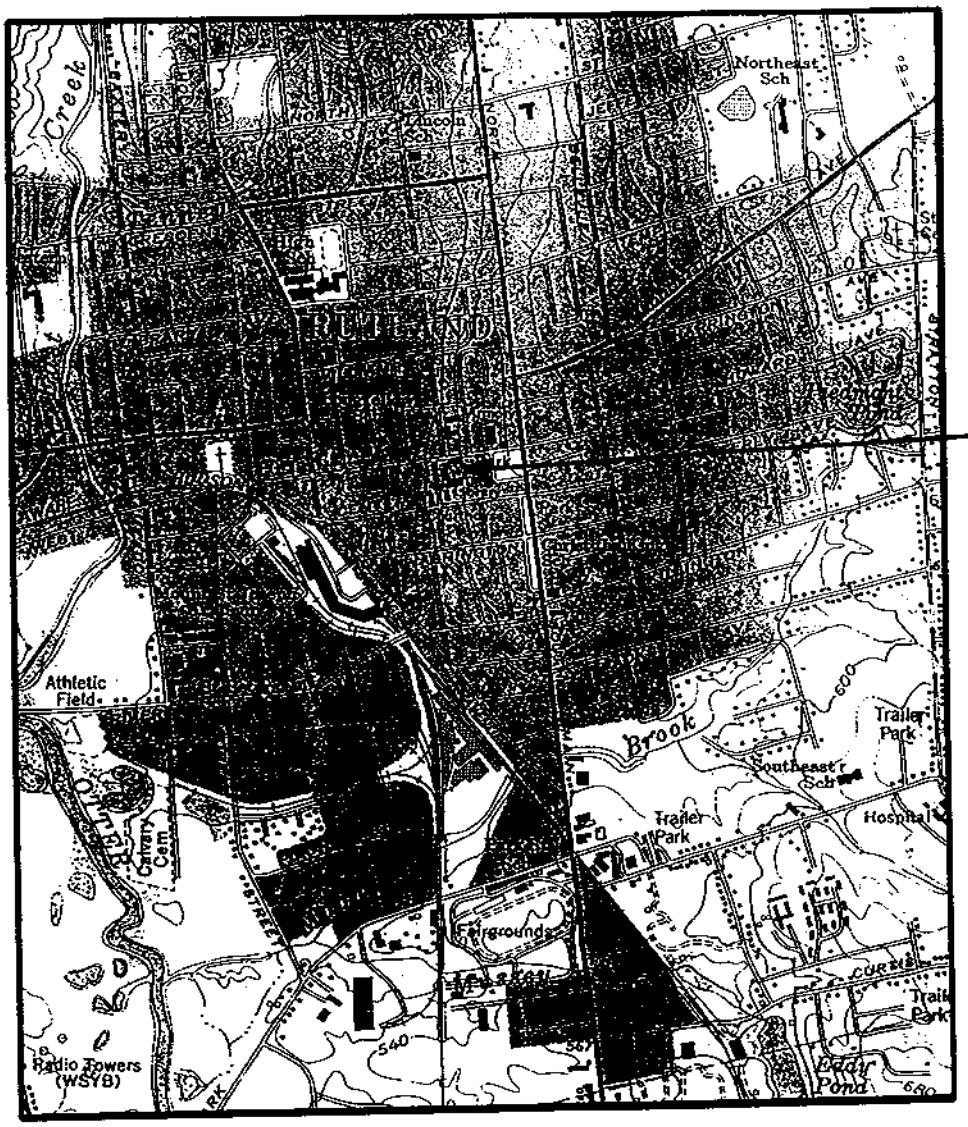
Ground Water Quality Results (ppb)*

Data Point	Compound	11/13/97
MW-1	Benzene	<1
	Toluene	<1
	Ethylbenzene	<1
	Xylenes	<3
	MTBE	<5
	BTEX	<6
	TPH (8100)*	<0.5
	TPH (8015)*	<0.1
MW-2	Benzene	
	Toluene	
	Ethylbenzene	
	Xylenes	
	MTBE	
	BTEX	
	TPH (8100)*	
	TPH (8015)*	
MW-3	Benzene	23
	Toluene	17
	Ethylbenzene	31
	Xylenes	220
	MTBE	91
	BTEX	291
	TPH (8100)*	18
	TPH (8015)*	2.06
MW-4	Benzene	
	Toluene	
	Ethylbenzene	
	Xylenes	
	MTBE	
	BTEX	
	TPH (8100)*	
	TPH (8015)*	
MW-5	Benzene	1.8
	Toluene	7
	Ethylbenzene	4.3
	Xylenes	53
	MTBE	<5
	BTEX	66.1
	TPH (8100)*	19
	TPH (8015)*	11.3
Church Basement Seep	Benzene	<1
	Toluene	<1
	Ethylbenzene	<1
	Xylenes	<3
	MTBE	<5
	BTEX	<6
	TPH (8100)*	<0.5
	TPH (8015)*	<0.1

NOTES:
< - Contaminant not detected at specified detection limit
* TPH values are in ppm

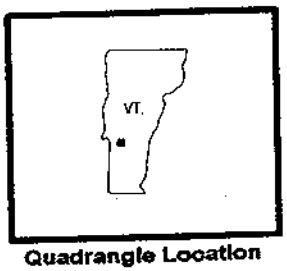
Figure 1

Grace Concregational Church
Rutland, Vermont
GENERAL LOCATION MAP



Source: USGS. 7.5 Min. x 15 Topographic Quadrangle of Rutland, VT. Quad

Scale: 1" = 2,000'



Quadrangle Location

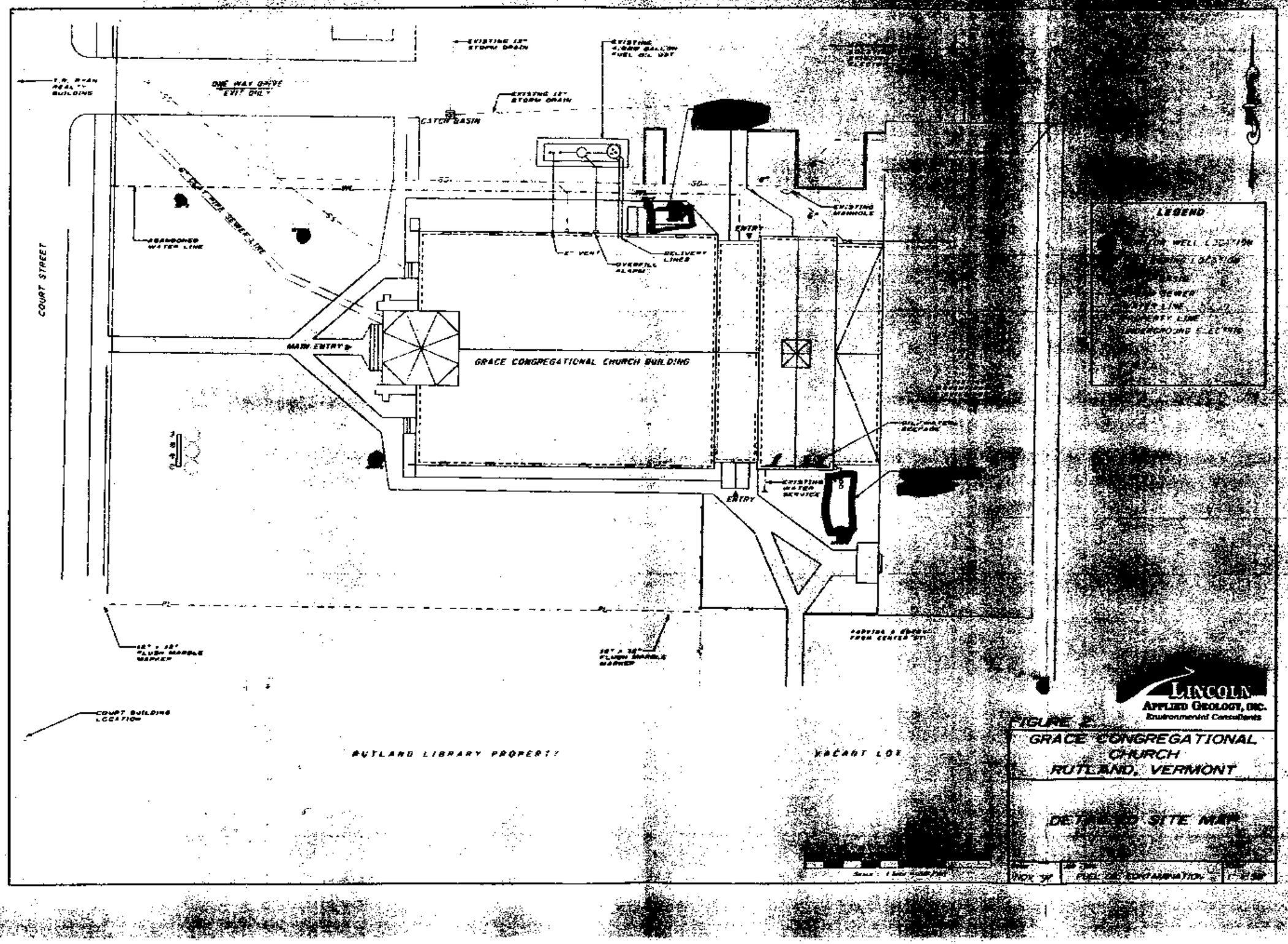

T.R. RYAN REAL TY BUILDING
ONE WAY DRIVE EXIT ONLY
EXISTING 12" STORM DRAIN
EXISTING 1,000 GALLON FUEL OIL VAT
CATCH BASIN
EXISTING 12" STORM DRAIN
COURT STREET
ABANDONED WATER LINE
EXISTING SEWER LINE
EXISTING MANHOLE
ENTRY
2" VENT
OVERFILL ALARM
DELIVERY LINES
MAIN ENTRY
GRACE CONGREGATIONAL CHURCH BUILDING
EXISTING WATER SERVICE
ENTRY
1/2" x 30" PLUMB MARBLE MARKER
1/2" x 30" PLUMB MARBLE MARKER
COURT BUILDING LOCATION
RUTLAND LIBRARY PROPERTY
VACANT LOT
LEGEND
LINCOLN
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FIGURE 2
GRACE CONGREGATIONAL CHURCH
RUTLAND, VERMONT
DETAILED SITE MAP

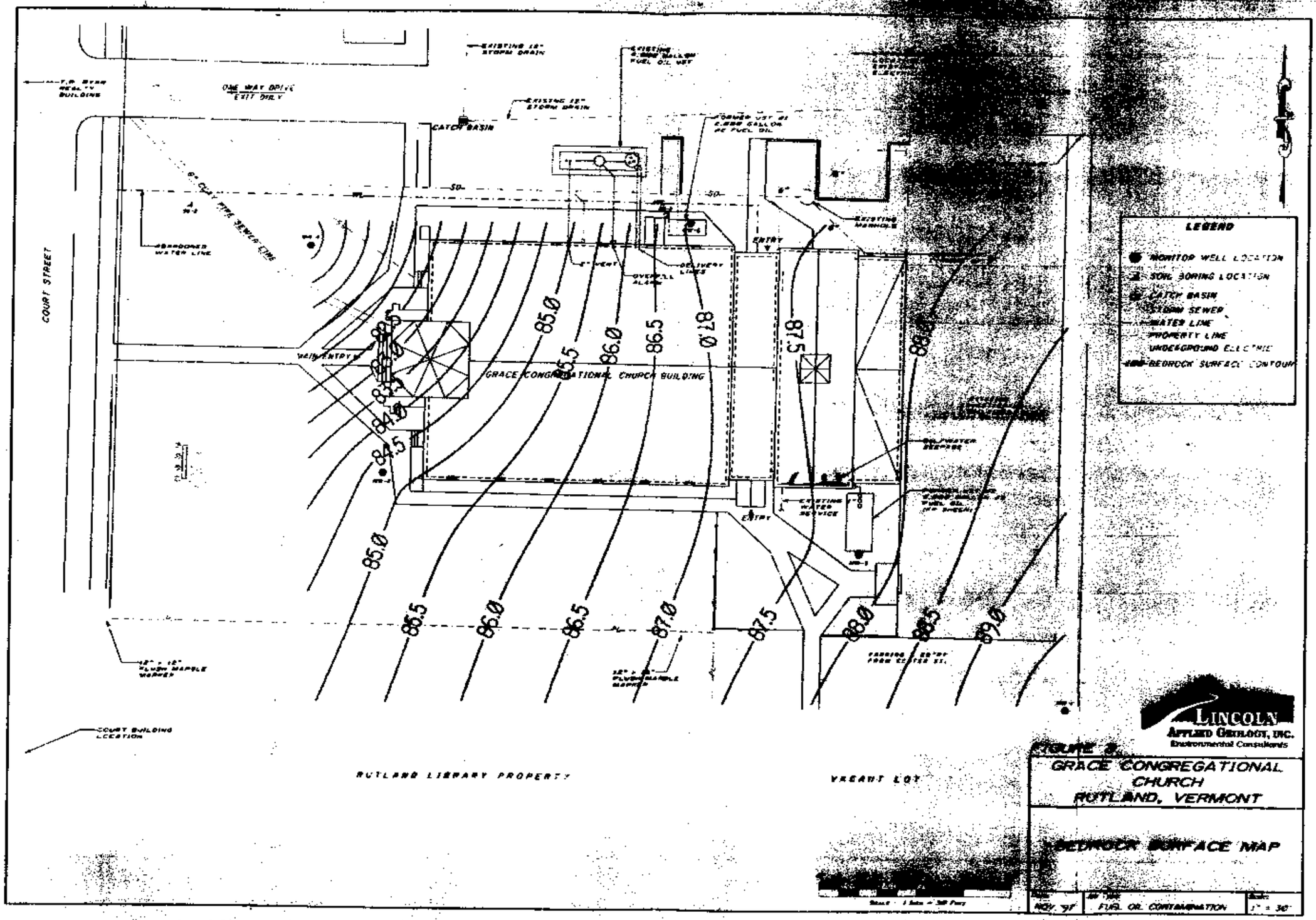
COURT STREET
ONE WAY DRIVE EXIT ONLY
CATCH BASIN
EXISTING 12" STORM DRAIN
EXISTING 2,000 GALLON FUEL OIL VAULT
FORMER VAULT OF 2,000 GALLON #2 FUEL OIL
6" CAST IRON SEWER LINE
ABANDONED WATER LINE
EXISTING MANHOLE
ENTRY
OVERFILL ALARM
DELIVERY LINES
WATER ENTRY
GRACE CONGREGATIONAL CHURCH BUILDING
EXISTING HEATER SERVICE
85.0
85.5
86.0
86.5
87.0
87.5
88.0
88.5
89.0
84.5
LEGEND
MONITOR WELL LOCATION
SOIL BORING LOCATION
CATCH BASIN
STORM SEWER
WATER LINE
PROPERTY LINE
UNDERGROUND ELECTRIC
BEDROCK SURFACE CONTOUR
COURT BUILDING LOCATION
RUTLAND LIBRARY PROPERTY
VACANT LOT
LINCOLN APPLIED GEOLOGY, INC.
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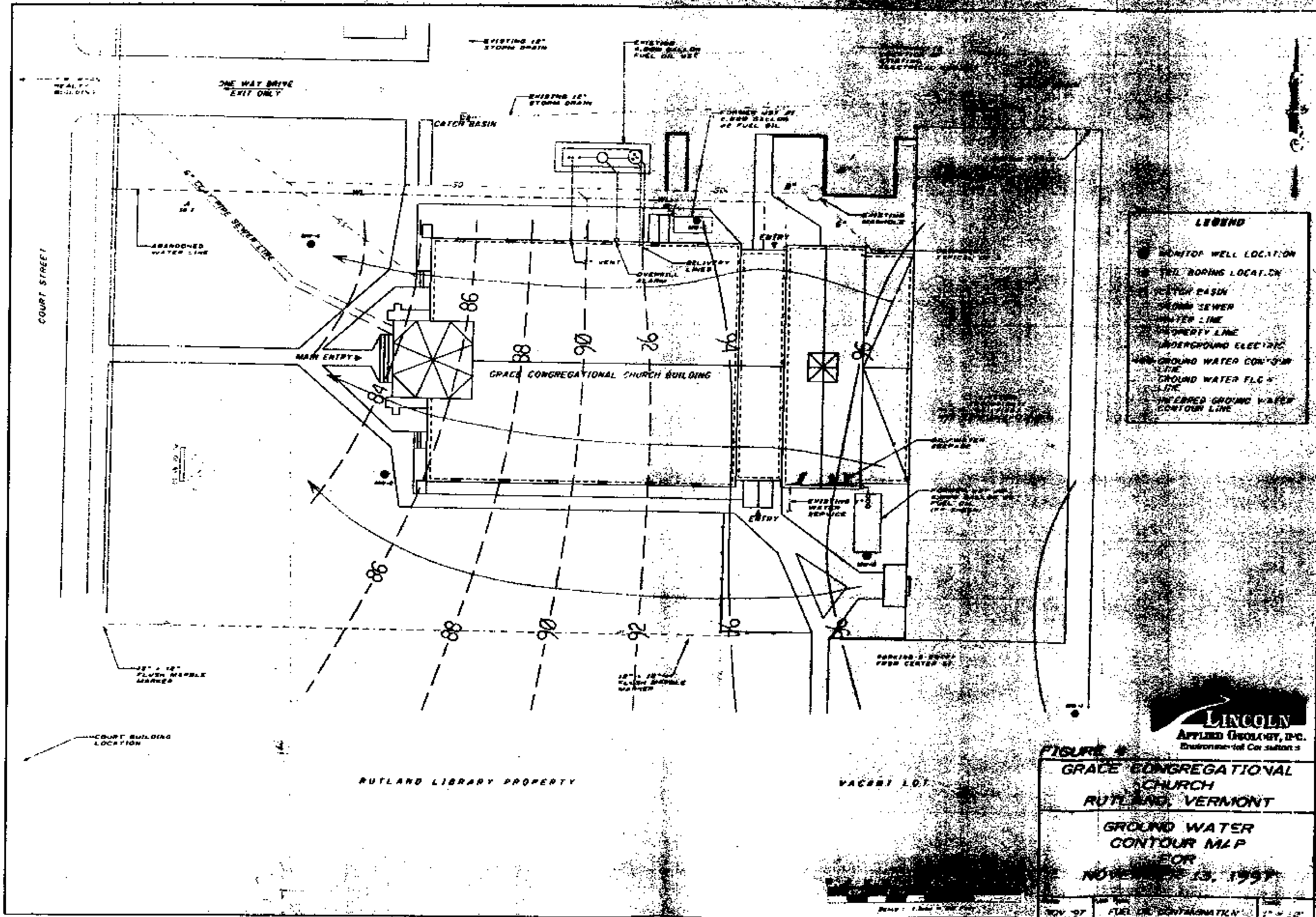
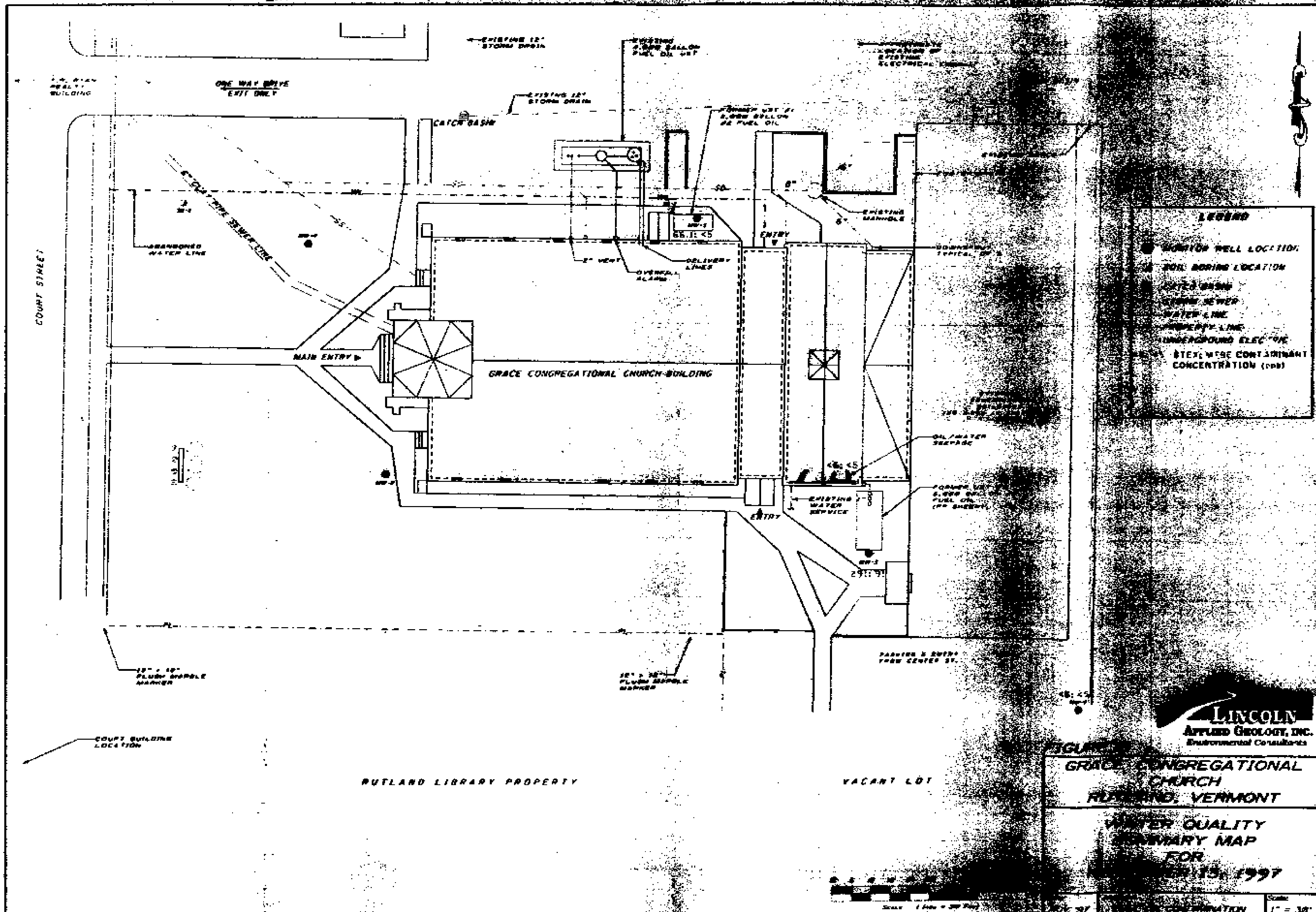
FIGURE 2
GRACE CONGREGATIONAL CHURCH
RUTLAND, VERMONT
BEDROCK SURFACE MAP
NOV. '91
FUEL OIL CONTAMINATION
1" = 30'



EXISTING 12" STORM DRAIN
ONE WAY DRIVE EXIT ONLY
CATCH BASIN
ABANDONED WATER LINE
COURT STREET
MAIN ENTRY
GRACE CONGREGATIONAL CHURCH BUILDING
VENT
DELIVERY LINES
OVERFILL ALARM
ENTRY
EXISTING MANHOLE
EXISTING WATER SERVICE
FLUSH MARBLE MARKER
COURT BUILDING LOCATION
RUTLAND LIBRARY PROPERTY
VACANT LOT
84
86
88
90
92
94
96
LEGEND
MONITOR WELL LOCATION
UNDERGROUND ELECTRIC
GROUND WATER CONTOUR LINE
GROUND WATER FLOW LINE
INFERRED GROUND WATER CONTOUR LINE
LINCOLN APPLIED GEOLOGY, INC.
Environmental Consultants
GRACE CONGREGATIONAL CHURCH
VERMONT
GROUND WATER CONTOUR MAP
NOV. '97



ONE WAY DRIVE
EXIT ONLY
COURT STREET
CATCH BASIN
ABANDONED WATER LINE
6" CLAY PIPE SEWER LINE
MAIN ENTRY
GRACE CONGREGATIONAL CHURCH BUILDING
2" VENT
OVERFILL ALARM
DELIVERY LINES
66.1: <5
ENTRY
EXISTING MANHOLE
8"
6"
OIL/WATER SEEPAGE
<5: <5
EXISTING WATER SERVICE
ENTRY
291: 91
48: <5
COURT BUILDING LOCATION
RUTLAND LIBRARY PROPERTY
VACANT LOT
LEGEND
MONITOR WELL LOCATION
SOIL BORING LOCATION
UNDERGROUND ELECTRIC
BTEX; MTBE CONTAMINANT CONCENTRATION (ppb)
LINCOLN
Applied Geology, Inc.
Environmental Consultants
CHURCH
VERMONT
QUALITY
MAP
FOR
1997
Scale
1" = 30'

Appendix A

Well Logs and Soil Boring Logs

WELL LOG

WELL:	MW - 1
LOCATION:	Grace Congregational Church, Rutland, Vermont - Upgradient and to the south of the new Church building, in vacant lot.
DRILLER:	Adams Engineering, Inc.
HYDROGEOLOGIST:	Jason Barnard, Lincoln Applied Geology, Inc.
DATE:	November 5, 1997

Soils Description: **(BG = Background [0.4], SL = Saturated Lamp [>500], ppm = Parts Per Million)**

Depth	Description	PID (ppm)
0.0 - 1.2'	Dark brown, very fine sandy silt loam, some medium gravel, damp. Roots to 0.9'.	BG
1.2 - 1.5'	Light brown, fine sandy silt, trace medium gravel, weak blocky structure, dry.	BG
1.5 - 2.7'	Concrete and brick, dry.	BG
2.7 - 5.0'	Light brown, very fine sandy silt, trace small gravel, damp.	BG
5.0 - 6.7'	Light brown, very fine sandy silt, some small gravel, moderately blocky structure. More very fine sand than above.	BG
6.7 - 10.1'	Light brown to light grey, very fine sandy silt, some small to medium gravel, dense blocky structure. Mottles present at 7.1', water level at 9.3'.	BG
10.1 - 10.9'	Light brown, silt, some very fine sand and small gravel, trace medium to large rock fragments, saturated.	BG
10.9 - 12.6'	Light brown, very fine sandy silt, some small to medium gravel with a few large rock fragments, dense blocky structure, damp. Slightly more fine sand than above. Auger refusal at 12.6', on bedrock.	BG

Well Construction:

Bottom of Boring:	12.6'
Bottom of Well:	12.5'
Well Screen:	10.0' (2.5 - 12.5') of 1.5" sch. 40 PVC, 0.010" slot
Solid Riser:	2.0' (0.5 - 2.5') of 1.5" sch. 40 PVC
Sand Pack:	10.5' (12.5 - 2.0')
Bentonite Seal:	1.0' (1.0 - 2.0'), slurry
Backfill:	None
Well Box:	Cemented flush

WELL LOG

WELL:	MW - 2
LOCATION:	Grace Congregational Church, Rutland, Vermont - Approximately 12' west of the southwest corner of the church building.
DRILLER:	Adams Engineering, Inc.
HYDROGEOLOGIST:	Jason Barnard, Lincoln Applied Geology, Inc.
DATE:	November 5, 1997

Soils Description: (**BG = Background** [0.4], **SL = Saturated Lamp** [>500], **ppm = Parts Per Million**)

Depth	Description	PID (ppm)
0.0 - 0.6'	Dark brown to black, very fine sandy loam, trace silt and fine gravel, dry.	BG
0.6 - 1.4'	Dark brown to brown, very fine sandy silt, loose granular structure, dry. Roots to 1.3'.	BG
1.4 - 5.0'	Brown with some black streaks, very fine sandy silt, trace fine gravel, very weak blocky structure, dry.	BG
5.0 - 6.0'	Brown, very fine sandy silt, trace small to medium gravel, weak blocky structure, dry. More very fine sand than above.	BG
6.0 -10.0'	Brown to light grey, very fine sandy silt, moderately blocky structure, moist.	BG
10.0 - 12.1'	Brown, very fine sandy silt, trace clay, dense blocky structure, dry. Auger refusal at 12.1' on bedrock.	BG

Well Construction:

Bottom of Boring:	12.1'
Bottom of Well:	12.1'
Well Screen:	10.0' (2.1 - 12.1') of 1.5" sch. 40 PVC, 0.010" slot
Solid Riser:	1.5' (0.6 - 2.1') of 1.5" sch. 40 PVC
Sand Pack:	10.6' (1.5 - 12.1')
Bentonite Seal:	0.75' (0.75 - 1.5'), slurry
Backfill:	None
Well Box:	Cemented flush

WELL LOG

WELL: MW - 3
LOCATION: Grace Congregational Church, Rutland, Vermont - On the south side of the main church building, directly within area of UST #2.
DRILLER: Adams Engineering, Inc.
HYDROGEOLOGIST: Jason Barnard, Lincoln Applied Geology, Inc.
DATE: November 6, 1997

Soils Description: **(BG = Background [0.2], SL = Saturated Lamp [>500], ppm = Parts Per Million)**

Depth	Description	PID (ppm)
0.0 - 0.5'	Dark brown, fine sandy loam, trace small to medium gravel, damp. Grass roots to 0.4'	0.6
0.5 - 0.7'	Light brown, medium to coarse sand, trace medium to large gravel, damp.	0.6
0.7 - 2.8'	Grey, very fine to fine sand, some silt and small gravel, trace large rock fragments, damp. A distinct fuel oil odor present.	10.0
2.8 - 5.0'	Light grey to brown, very fine to fine sandy silt, trace large rock fragments, damp. Slight fuel oil odor present.	BG
5.0 - 7.9'	Light grey, very fine sandy silt, some small gravel, trace large rock fragments, damp to around 7.1', then becomes saturated. Fuel oil odor present.	3.0
7.9 - 10.1'	Light brown, very fine sandy silt, little fine to medium gravel, trace clay, damp. Strong fuel oil odor.	11.2
10.1 - 10.9'	Light grey, very fine sandy silt, some small gravel, trace clay, pliable structure, moist. Fuel oil odor present.	16.8
10.9 - 12.2'	Light brown, very fine sandy silt, trace small to medium gravel, several large rock fragments, dense angular blocky structure, dry. Auger refusal at 12.2' on bedrock.	2.1

Well Construction:

Bottom of Boring: 12.2'
Bottom of Well: 12.0'
Well Screen: 10.0' (2.0 - 12.0') of 1.5" sch. 40 PVC, 0.010" slot
Solid Riser: 1.5' (0.5 - 2.0') of 1.5" sch. 40 PVC
Sand Pack: 10.5' (1.5 - 12.0')
Bentonite Seal: 0.5' (1.0 - 1.5'), slurry
Backfill: None
Well Box: Cemented flush

WELL LOG

WELL:	MW - 4
LOCATION:	Grace Congregational Church, Rutland, Vermont - Approximately 38' west of the northwest corner of the church building.
DRILLER:	Adams Engineering, Inc.
HYDROGEOLOGIST:	Jason Barnard, Lincoln Applied Geology, Inc.
DATE:	November 5, 1997

Soils Description: (**BG = Background** [0.4], **SL = Saturated Lamp** [>500], **ppm = Parts Per Million**)

Depth	Description	PID (ppm)
0.0 - 0.9'	Dark brown to black, very fine sandy loam, some silt, trace small gravel, dry.	BG
0.9 - 2.5'	Dark brown to brown, very fine sand, some silt, very weak blocky structure, dry.	BG
2.5 - 5.0'	Light brown, very fine sandy silt, trace small to medium gravel, weak blocky structure, dry.	BG
5.0 - 5.6'	Light brown, very fine sandy silt, trace small to medium gravel, moderately blocky structure, dry.	BG
5.6 - 6.0'	Red, brick related material, very dense, dry.	BG
6.0 - 10.1'	Light brown, very fine sandy silt, trace of clay, and medium gravel, moderately blocky structure, dry until 7.5' where it is slightly damp. Less sand than above.	BG
10.1 - 13.9'	Light brown to grey, silt, little fine sand, few larger rock fragments, slightly damp. More dense blocky structure than above.	BG
13.9 - 14.2'	Brown, fine to medium sand, trace silt, a few chipped bedrock fragments, damp. Auger refusal at 14.2' on bedrock.	BG

Well Construction:

Bottom of Boring:	14.2'
Bottom of Well:	14.2'
Well Screen:	10.0' (4.2 - 14.2') of 1.5" sch. 40 PVC, 0.010" slot
Solid Riser:	4.0' (0.2 - 4.2') of 1.5" sch. 40 PVC
Sand Pack:	11.0' (3.2 - 14.2')
Bentonite Seal:	2.0' (1.2 - 3.2'), slurry
Backfill:	None
Well Box:	Cemented flush

WELL LOG

WELL: MW - 5
LOCATION: Grace Congregational Church, Rutland, Vermont - Approximately 6' east of SB - 1, within area of UST #1.
DRILLER: Adams Engineering, Inc.
HYDROGEOLOGIST: Jason Barnard, Lincoln Applied Geology, Inc.
DATE: November 6, 1997

Soils Description: (**BG = Background** [0.2], **SL = Saturated Lamp** [>500], **ppm = Parts Per Million**)

Depth	Description	PID (ppm)
0.0 - 0.6'	Dark brown to black, very fine to fine sandy loam, wood bark mulch, damp. No distinct fuel oil odor.	1.4
0.7 - 1.4'	Brown to grey, very fine sandy silt, trace small gravel, damp.	7.0
1.5 - 2.3'	White coarse sand, non-native material, dry.	1.4
2.4 - 5.0'	Dark brown, very fine to fine sandy silt, trace small to medium gravel, dry.	1.8
5.0 - 6.5'	Light grey, very fine to fine sandy silt, trace coarse sand and clay, few large rock fragments, pliable structure, moist. Strong fuel oil odor present.	28
6.6 - 7.9'	Brown to grey, very fine to fine sandy silt, some small gravel, angular blocky structure, damp. Strong fuel oil odor present.	22
8.0 - 9.8'	Light brown, very fine sandy silt, some small gravel, trace large rock fragments, very dense angular blocky structure, dry.	2.7
9.9 - 11.0'	Brown, very coarse sand, some fine sandy silt, saturated.	4.8
11.1 - 12.3'	Brown, silty clay, trace very fine sand, and medium to large gravel, dense blocky structure, moist. The most clay found in any of the cores. Auger refusal at 12.3' on bedrock.	2.6

Well Construction:

Bottom of Boring: 12.3'
Bottom of Well: 12.3'
Well Screen: 9.0' (3.3 - 12.3')of 1.5" sch. 40 PVC, 0.010" slot
Solid Riser: 3.0' (0.3 - 3.3') of 1.5" sch. 40 PVC
Sand Pack: 10.0' (2.0 - 12.0')
Bentonite Seal: 1.0 (1.0 - 2.0'), slurry
Backfill: None
Well Box: Cemented flush

SOIL BORING LOG

BORING: SB - 1
LOCATION: Grace Congregational Church, Rutland, Vermont - Approximately 6' west of UST #1 area, near church hatchway doors.
DRILLER: Adams Engineering, Inc.
HYDROGEOLOGIST: Jason Barnard, Lincoln Applied Geology, Inc.
DATE: November 5, 1997

Soils Description: **(BG = Background [0.2], SL = Saturated Lamp [>500], ppm = Parts Per Million)**

Depth	Description	PID (ppm)
0.0 - 0.7'	Dark brown to black, fine to medium sand, wood bark mulch, damp.	1.3
0.7 - 0.9'	Reddish brown, sandstone, dry.	1.3
0.9 - 2.2'	Light brown, very fine to fine sand, some silt and medium to large gravel. A black fine sandy loam lense at 1.7 - 1.8', dry.	1.0
2.2 - 3.5'	Light brown to red, very fine sand, some silt, and medium to large gravel, weak angular blocky structure, damp.	1.6
3.5 - 5.0'	Light brown, very fine to fine sand, some silt, little medium gravel, slightly damp.	BG
5.0 - 5.4'	Black to brown, very fine to fine sand, some silt, loose granular structure, damp. Biomattter and roots present.	1.0
5.4 - 6.7'	Brown, very fine to fine sandy silt, trace clay and very small gravel, pliable structure, damp.	1.0
6.7 - 10.0'	Light brown to grey, very fine to fine sand, some silt and small gravel, trace larger rock fragments, angular blocky structure, dry.	1.5
10.0 - 10.9'	Brown, fine to coarse sandy silt, some large gravel, saturated.	1.6
10.9 - 12.5'	Brown to light grey, fine sandy silt, little coarse sand, trace large rock fragments, dense blocky structure, dry. Auger refusal at 12.5' on bedrock.	1.2
	No well installed.	

SOIL BORING LOG

BORING: SB - 2
LOCATION: Grace Congregational Church, Rutland, Vermont - West of MW-4 near abandoned water line.
DRILLER: Adams Engineering, Inc.
HYDROGEOLOGIST: Jason Barnard, Lincoln Applied Geology, Inc.
DATE: November 5, 1997

Soils Description: **(BG = Background [0.2], SL = Saturated Lamp [>500], ppm = Parts Per Million)**

Depth	Description	PID (ppm)
0.0 - 6.5'	Drove 1" steel rod to bedrock refusal at 6.5' depth. No samples collected.	
	No well installed.	

Appendix B

Water Quality Laboratory Reports For November 13, 1997

GREEN MOUNTAIN LABORATORIES, INC.

RR 3, BOX 5210

Montpelier, Vermont 05602

Phone (802) 223 - 1468 Fax (802) 223 - 8688

LABORATORY RESULTS

CLIENT NAME:	Lincoln Applied Geology	REFERENCE NO:	3036
ADDRESS:	RD 1 Box 710	PROJECT NO:	NA
	Bristol, VT 05443	DATE OF SAMPLE:	11/13/97
SAMPLE LOCATION:	Grace Church	DATE OF RECEIPT:	11/14/97
SAMPLER:	Jim Holman	DATE OF ANALYSIS:	11/25/97
ATTENTION:	Jason Barnard	DATE OF REPORT:	11/28/97

Pertaining to the analyses of specimens submitted under the accompanying chain of custody form, please note the following:

- Water samples submitted for VOC analysis were preserved with HCl.
- Specimens were processed and examined according to the procedures outlined in the specified method.
- Holding times were honored.
- Instruments were appropriately tuned and calibrations were checked with the frequencies required in the specified method.
- Blank contamination was not observed at levels interfering with the analytical results.
- Continuing Calibration standards were monitored at intervals indicated in the specified method. The resulting analytical precision and accuracy were determined to be within method QA/QC acceptance limits.
- The efficiency of analyte recovery for individual samples was monitored by the addition of surrogate analyte to all samples, standards, and blanks. Surrogate recoveries were found to be within laboratory QA/QC acceptance limits, unless noted otherwise.

Reviewed by:

Raul Sanchez
Chemical Services

GREEN MOUNTAIN LABORATORIES, INC.

Montpelier, Vermont 05602

Phone (802) 223 - 1468 Fax (802) 223 - 8688

LABORATORY RESULTS

GC/MS METHOD - BTEX (BENZENE, TOLUENE, ETHYLBENZENE, XYLENES) + MTBE

GML REF. # :	3036
STATION:	MW-1
ANALYSIS DATE:	11/25/97
DATE SAMPLED:	11/13/97
SAMPLE TYPE:	WATER

PARAMETER	PQL (µg/L)	Conc. (µg/L)
Benzene	1	ND
Toluene	1	ND
Ethylbenzene	1	ND
Xylenes	3	ND
MTBE	5	ND

Surrogate % Recovery: 97.3 %

ND = Not Detected
BPQL = Below Practical Quantitation Limits

DEC 05 1997

GREEN MOUNTAIN LABORATORIES, INC.

Montpelier, Vermont 05602

Phone (802) 223 - 1468 Fax (802) 223 - 8688

LABORATORY RESULTS

GC/MS METHOD - BTEX (BENZENE, TOLUENE, ETHYLBENZENE, XYLENES) + MTBE

GML REF. # :	3036
STATION:	MW-3
ANALYSIS DATE:	11/25/97
DATE SAMPLED:	11/13/97
SAMPLE TYPE:	WATER

PARAMETER	PQL (µg/L)	Conc. (µg/L)
Benzene	10	23
Toluene	10	17
Ethylbenzene	10	31
Xylenes	30	220
MTBE	50	91

Surrogate % Recovery: 97.1 %

ND = Not Detected
BPQL = Below Practical Quantitation Limits

GREEN MOUNTAIN LABORATORIES, INC.

Montpelier, Vermont 05602

Phone (802) 223 - 1468 Fax (802) 223 - 8688

LABORATORY RESULTS

GC/MS METHOD - BTEX (BENZENE, TOLUENE, ETHYLBENZENE, XYLENES) + MTBE

GML REF. # :	3036
STATION:	MW5
ANALYSIS DATE:	11/25/97
DATE SAMPLED:	11/13/97
SAMPLE TYPE:	WATER

PARAMETER	PQL (µg/L)	Conc. (µg/L)
Benzene	1	1.8
Toluene	1	7
Ethylbenzene	1	4.3
Xylenes	3	53
MTBE	5	ND

Surrogate % Recovery: 101 %

ND = Not Detected
BPQL = Below Practical Quantitation Limits

DEC 0 5 1997

GREEN MOUNTAIN LABORATORIES, INC.

Montpelier, Vermont 05602

Phone (802) 223 - 1468 Fax (802) 223 - 8688

LABORATORY RESULTS

GC/MS METHOD - BTEX (BENZENE, TOLUENE, ETHYLBENZENE, XYLENES) + MTBE

GML REF. # :	3036
STATION:	BASEMENT WATER NEAR SEEP
ANALYSIS DATE:	11/25/97
DATE SAMPLED:	11/13/97
SAMPLE TYPE:	WATER

PARAMETER	PQL (µg/L)	Conc. (µg/L)
Benzene	1	ND
Toluene	1	ND
Ethylbenzene	1	ND
Xylenes	3	ND
MTBE	5	ND

Surrogate % Recovery: 96.7 %

ND = Not Detected
BPQL = Below Practical Quantitation Limits

DEC 05 1997

GREEN MOUNTAIN LABORATORIES, INC.

Montpelier, Vermont 05602

Phone (802) 223 - 1468 Fax (802) 223 - 8688

LABORATORY RESULTS

GC/MS METHOD - BTEX (BENZENE, TOLUENE, ETHYLBENZENE, XYLENES) + MTBE

GML REF. # : 3036
STATION: TRIP BLANK
ANALYSIS DATE: 11/25/97
DATE SAMPLED: 11/13/97
SAMPLE TYPE: WATER

PARAMETER	PQL (µg/L)	Conc. (µg/L)
Benzene	1	ND
Toluene	1	ND
Ethylbenzene	1	ND
Xylenes	3	ND
MTBE	5	ND

Surrogate % Recovery: 96.4 %

ND = Not Detected
BPQL = Below Practical Quantitation Limits

Green Mountain Laboratories, Inc.

RR #3, Box 5210
Montpelier, VT 05602
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E-mail : GML@together.net

Page 1 of 1

GML # 3036

Client Name	LINCOLN APPLIED GEOLOGY
Address	RD. 1 BOX 710 BRISTOL VT. 05443
Phone / Fax	453 4384 453-5399
Project Name	GRACE CHURCH
Project Number	—
Project Manager	JASON BARNARD
Sampler	JIM HOLMAN

GML Sample #	Sample Location	Date	Time	# of Cont.	Pres.	Sample Type	Analysis Requested: 8020 + BTEX MTBE + NAPHTHALENE BOIS	Analysis Requested: TPH 8100	Remarks
1	TRIP BLANK	11/13/97	800	2	HCl	H_2O	X		
2	MW-1	11/13/97	1133	2	HCl	H_2O	X		AFTER PURGING
3	MW-5	11/13/97	1151	2	HCl	H_2O	X		BEFORE PURGING
4	MW-3	11/13/97	1217	2	HCl	H_2O	X		AFTER PURGING
5	BASEMENT WATER NEAR SEEP	11/13/97	1045	2	HCl	H_2O	X		
6	MW-1	11/13/97	1133	1 1.0 LITRE	—	H_2O		X	AFTER PURGING
7	MW-5	11/13/97	1151	1 1.0 LITRE	—	H_2O		X	BEFORE PURGING
8	MW-3	11/13/97	1217	1 1.0 LITRE	—	H_2O		X	AFTER PURGING
9	BASEMENT WATER NEAR SEEP	11/13/97	1045					X	

Chain of Custody

Relinquished By:	Date / Time: 11/19/97 1130 AM	Received By:	Date / Time: 11/14/97 11:46
Relinquished By:	Date / Time:	Received By:	Date / Time:
Relinquished By:	Date / Time:	Received By:	Date / Time:
Lot Temperature: COOLER BLANK @ 6.0°C	Vial Lot ID # :	Accepted By:	

Green Mountain Laboratories, Inc.

RR#3, Box 5210
Montpelier, Vermont 05602
Phone: (802) 223-1468 Fax: (802) 223-8688

LABORATORY RESULTS

CLIENT NAME:	Lincoln Applied Geology	REF #:	3036
CLIENT ADDRESS:	RD 1 Box 710	PROJECT NO.:	NA
	Bristol, Vermont 05443	DATE OF SAMPLE:	11/13/97
SAMPLE LOCATION:	Grace Church	DATE OF RECEIPT:	11/14/97
SAMPLER:	Jim Holman	DATE OF ANALYSIS:	11/25/97
ATTENTION:	Jason Barnard	DATE OF REPORT:	12/05/97

Total Petroleum Hydrocarbons (TPH) by EPA Method 8015M

Sample	TPH Results (mg/L - ppm)	PQL (mg/L - ppm)
TRIP BLANK	<0.10	0.10
MW - 1	<0.10	0.10
MW - 5	11.3	0.10
MW - 3	2.06	1.0
BASEMENT WATER NEAR SEEP	<0.10	0.10

Reviewed by:

Raul Sanchez
Chemical Services

Green Mountain Laboratories, Inc.

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E-mail : GML@together.net

Page 1 of 1

GML # 3036

Client Name	LINCOLN APPLIED GEOLOGY
Address	RD. 1 BOX 710 BRISTOL VT. 05443
Phone / Fax	453 4384 453-5399
Project Name	GRACE CHURCH
Project Number	—
Project Manager	JASON BARNARD
Sampler	JIM HOLMAN

GML Sample #	Sample Location	Date	Time	# of Cont.	Pres.	Sample Type	Analysis Requested: 8020 + ISTEX MTBE + MODIFIED 8015 TPH 8100	Remarks
1	TRIP BLANK	11/13/97	800	2	HCl	H_2O	X	
2	MW-1	11/13/97	1133	2	HCl	H_2O	X	AFTER PURGING
3	MW-5	11/13/97	1151	2	HCl	H_2O	X	BEFORE PURGING
4	MW-3	11/13/97	1217	2	HCl	H_2O	X	AFTER PURGING
5	BASEMENT WATER NEAR SEEP	11/13/97	1045	2	HCl	H_2O	X	
6	MW-1	11/13/97	1133	1 1.0 LITRE	—	H_2O	X	AFTER PURGING
7	MW-5	11/13/97	1151	1 1.0 LITRE	—	H_2O	X	BEFORE PURGING
8	MW-3	11/13/97	1217	1 1.0 LITRE	—	H_2O	X	AFTER PURGING
9	BASEMENT WATER NEAR SEEP	11/13/97	1045				X	

Chain of Custody

Relinquished By:	Date / Time: 11/14/97 1130 AM	Received By:	Date / Time: 11/14/97 11:46
Relinquished By:	Date / Time:	Received By:	Date / Time:
Relinquished By:	Date / Time:	Received By:	Date / Time:
Lot Temperature: COOLER BLANK @ 6.0°C	Vial Lot ID # :	Accepted By:	

Green Mountain Laboratories, Inc.

RR#3 Box 5210
Montpelier, Vermont 05602
Phone (802) 223-1468 Fax (802) 223-8688

LABORATORY RESULTS

CLIENT NAME:	Lincoln Applied Geology	REF #:	3036
CLIENT ADDRESS:	RD 1 Box 710	PROJECT NO.:	NA
	Bristol, Vermont 05443	DATE OF SAMPLE:	11/13/97
SAMPLE LOCATION:	Grace Church	DATE OF RECEIPT:	11/14/97
SAMPLER:	Jim Holman	DATE OF ANALYSIS:	11/19/97
ATTENTION:	Jason Barnard	DATE OF REPORT:	11/24/97

NOV

Total Petroleum Hydrocarbons (TPH) Results by EPA Modified 8100

Sample	Result (mg/L-ppm)*
MW - 1	<0.5
MW - 5	19
MW - 3	18
Basement Water Near Seep	<0.5

* Fuel (Diesel) and Lubricating Oil Range Organics.

NOV

Reviewed by:

Raul Sanchez
Chemical Services

Green Mountain Laboratories, Inc.

RR #3, Box 5210
Montpelier, VT 05602
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Page 1 of 1

GML # 3036

Client Name	LINCOLN APPLIED GEOLOGY
Address	RD. 1 BOX 710 BRISTOL VT. 05443
Phone / Fax	453 4384 453-5399
Project Name	GRACE CITYECH
Project Number	—
Project Manager	JASON BARNARD
Sampler	JIM HOLMAN

GML Sample #	Sample Location	Date	Time	# of Cont.	Pres.	Sample Type	Analysis Requested: 8020 + BTEX MTBE + NAPHTHALENE	Analysis Requested: TPH 8100	Remarks
1	TRIP BLANK	11/13/97	800	2	HCL	H_2O	X		
2	MW-1	11/13/97	1133	2	HCL	H_2O	X		AFTER PURGING
3	MW-5	11/13/97	1151	2	HCL	H_2O	X		BEFORE PURGING
4	MW-3	11/13/97	1217	2	HCL	H_2O	X		AFTER PURGING
5	BASEMENT WATER NEAR SEEP	11/13/97	1045	2	HCL	H_2O	X		
6	MW-1	11/13/97	1133	1 1.0 LITRE	—	H_2O		X	AFTER PURGING
7	MW-5	11/13/97	1151	1 1.0 LITRE	—	H_2O		X	BEFORE PURGING
8	MW-3	11/13/97	1217	1 1.0 LITRE	—	H_2O		X	AFTER PURGING
9	BASEMENT WATER NEAR SEEP	11/13/97	1045					X	

Chain of Custody

Relinquished By:	Date / Time: 11/19/97 1130 AM	Received By:	Date / Time: 11/14/97 11:46
Relinquished By:	Date / Time:	Received By:	Date / Time:
Relinquished By:	Date / Time:	Received By:	Date / Time:
Lot Temperature: COOLER BLANK @ 6.0°C	Vial Lot ID # :	Accepted By:	